Leaving fear behind

New scanners transform the MRI experience in some Flemish hospitals

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When doctors make a diagnosis, they can rely on an array of high-tech scanners that turn their patients' bodies virtually inside out. It's impossible to imagin e a modern-day hospital without medical imaging equipment.

> MRI scans can be frightening, especially for very young and elderly patients

MRI – magnetic resonance imaging – is one of the commonly used techniques in the radiology department. Instead of using ionising radiation, as a CT scanner does and which can only be used in limited doses, an MRI uses magnetism to penetrate the body. With the help of an injected contrast fluid, a radiologist uses this scanner to light up particular parts of the internal physiology.

© Courtesy Philips Health Care

The new patient-friendly MRI scanner can be found in Knokke and a few other hospitals across Flanders

The appearance of an MRI scanner is well known. The patient lies on a movable table that slides into a narrow cylindrical tunnel, and, once in place, they must lie very still for almost an hour.
For many patients, this is a frightening experience. The enclosed space and the strange noises produced by the scanner can make for a very uncomfortable experience. So they start to wiggle, which destroys the quality of the images. Frequently, the entire process has to start all over.
So why not transform the time that a patient spends inside a scanner into a relaxing experience? That's just what Philips, a world leader in medical imaging technology, has done. For its "ambient experience" programme, the multinational with Dutch roots has developed a new generation of patient-friendly scanners.
Philips' solution consists of pleasant, relaxing images shown to the patient from the moment they enter the scanner's tunnel until the end of the procedure.
"Patients can listen to music or other sounds through headphones," explains Jo Bostyn, business manager at Philips Belux. "Thanks to the images and sounds, they are relaxed and lie still throughout the entire scanning procedure."
To date, Philips has installed 750 of these MRI scanners in hospitals around the world, at a cost of €2.6 million each. The AZ Gezondheidszorg Oostkust in Knokke, on the coast, is one of the few in Flanders that uses the technology.
"It's common knowledge that an MRI scan can be frightening," says Francis Vanneste, head of the radiology department in Knokke. "Especially for very young and elderly patients."
In Vanneste's department, the patient can choose from 10 light and sound themes by tapping on a screen. The desired theme is then created by a projection of animated slides. "Because of the specially designed LED lighting, they don't experience the tunnel effect," says Vanneste.
A big advantage of the new scanner is that children don't need to be given tranquillisers to get them through the procedure. Vanneste: "In our previous scanner this was necessary for more than one-third of our young patients. Afterwards, they needed more than six hours to recover from the pills."

People with special needs help architects to see space differently

\ WWW.ARCHITECTUUR.KULEUVEN.BE/AIDA

In a recent survey among Flemish architects, accessibility legislation made the top 10 list of the most irritating aspects of their profession. After all, the goal of the requirements is to allow people with a physical or mental disability to be able to easily access buildings, not to stimulate the designer's creativity.
Many architects feel that these norms restrict their professional freedom. The requirements, they say, don't leave room for an architect to come up with more creative or individualised solutions.
But accessibility doesn't need to clash with the designer's itch for freedom, says Ann Heylighen, a professor in architecture at the University of Leuven (KU Leuven). Heylighen (*pictured*) recently finished the Aida project (Architectural design In Dialogue with dis-Ability), in which the average architect's practices were turned upside down.
"The aim of the project was to trigger rather than restrict creativity, by acknowledging the potentials of disability," says Heylighen. "Through their particular interaction with the built environment, disabled people develop the ability to identify spatial qualities that architects may not be aware of. They expand the way architects understand and design space."

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To explain that added value – for disabled and non-disabled people – Heylighen offers a useful metaphor. "A sommelier in a restaurant can identify multiple types of bitterness in a single glass. Many of these types remain unnoticed for the average wine drinker, but they all nevertheless contribute to the taste of the wine. Similarly, disabled people may draw the architect's attention to spatial qualities that we all sense but can never pinpoint."
So far, Heylighen's approach has been used in several renovation jobs in buildings on the KU Leuven campus. Inside the large auditorium in the Maria Theresia College, the acoustics were improved based on an analysis made with the help of disabled students.
"This analysis directly informed major alterations to improve the acoustic accessibility of the auditorium," says Heylighen. "That's crucial for students with a hearing or visual impairment, but also for students of the 'University of the Third Age' and non-native listeners."
Aida focused on disability in the broadest sense. "People with sensory impairment such as poor vision or blindness can teach architects a lot about the role of non-visual sensory qualities in the built environment," explains Heylighen. "People with an autism spectrum disorder may be highly sensitive to the logic and legibility of a building. And from people with dementia, architects can learn how the built environment offers us landmarks in orientating ourselves."
The team behind the project was supported by the European Research Council (ERC), which awarded a prestigious starting grant to Heylighen covering the period 2007-2013. Recently, the professor also received a Proof-of-Concept Grant from the ERC, which is given to assist in the commercialisation of academic research.
In a follow-up project called Rent-a-Spatialist, Heylighen's team now wants to export its method used to analyse KU Leuven buildings beyond the university campus.
"We want to set up a consultancy service that enables disabled people to 'rent out' their disability experience to architects," explains Heylighen. "Our goal is twofold: to contribute to a more inclusive built environment and to strengthen disabled people's position on the labour market by helping them to gain work experience." \ SS

WEEK IN INNOVATION

Flanders launches prison health study

The government of Flanders has launched a study to assess the general health of prisoners in the region. The results will be used to implement more effective health projects for prisoners. Setting up health projects for prisoners is difficult, said Dana Mariën, policy co-ordinator at the prison in Beveren. "There are many non-Dutch-speakers, underprivileged people and different levels of education," she said. "Prisoners have little control over their diet and exercise little, so they often gain weight. The stress also worsens their smoking habit. All these aspects have to be taken into consideration in the development of a health policy."

Children gaming for 40 minutes a day

Flemish children aged between three and 10 spend an average of 40 minutes a day on computer games. The time increases with age, from 21 minutes a day for the youngest to 74 minutes for the eldest. The survey was carried out by Ghent-based digital research centre iMinds among more than 9,800 parents. According to the study, most parents feel that gaming is useful and has educational aspects. Parents who had wholly negative views of gaming were more inclined to strictly monitor their children, which had negative effects. Those with a more nuanced view were better able to guide their children.

Software offers ultra-fast debugging

Researchers from the universities of Antwerp (UA) and Brussels (VUB) have developed a toolkit that prevents bugs appearing during update cycles by Amazon and Facebook. Every piece of software in the update process needs to be tested thoroughly to detect possible errors, which often requires a lot of power and is time-consuming. UA and VUB research groups have come up with a solution: Instead of debugging the entire software package over and over, they focus on the differences between two versions. "These differences are very small," said Serge Demeyer, a computer scientist at UA. "We can run very complex software analyses in a relatively short time. The result is better software, a higher degree of functionality and fewer errors."